Amendments to the Drawings:

Sheet 2 of 8 has been amended.

In Figure 3 on sheet 2 of 8, the WNN (wireless network node) formerly identified as 95 has been amended to be 200. This amendment brings the figure into agreement with the description of Figure 3 on page 23 of the specification.

Attachment: Replacement Sheet

Annotated Sheet Showing Changes

REMARKS/ARGUMENTS

Amendments to Specification

A minor editorial amendment has been made in the specification by replacing the paragraph starting on p. 11, line 17. An attorney docket number formerly used to identify a U.S. patent application has been replaced with the patent application number.

Amendments to Drawings

In Figure 3 on sheet 2 of 8, the WNN (wireless network node) formerly identified as 95 has been amended to be 200. This amendment brings the figure into agreement with the description of Figure 3 on page 23 of the specification.

Status of Claims

Claims 10-31 remain in the application. Claims 1-9 and 32-38 remain withdrawn.

Amendments to Claims

Claims 10-16, 19 and 21-31 have been amended by replacing "auxiliary antenna" and "auxiliary antenna port" with "auxiliary transit antenna" and "auxiliary transit antenna port". Support for these amendments are found on page 22, lines 1-16 and page 23, line 30 to page 24, line 7.

Note claim 10 previously referred to an "auxiliary transit antenna port" and claim 18 previously referred to an "auxiliary transit antenna". This amendment is a clarifying amendment. It is clear from the specification and claims as filed that the auxiliary antenna was for transit communications.

Claim 26 has been amended to recite "adding the auxiliary transit antenna to a list of active antennas adapted for at least one of transmitting and receiving wireless signals so that the auxiliary transit antenna can be included or ignored as appropriate for at least one of transmitting and receiving wireless signals through the auxiliary transit antenna coupled to the auxiliary transit antenna port; upon determining that an auxiliary transit antenna is not coupled to the auxiliary transit antenna port, ~~not using the auxiliary antenna port~~ removing the auxiliary transit antenna from a list of active antennas so that the auxiliary transit antenna will not be used". The underlined portions are new to the claim and the portions that are crossed out represent content that has been cancelled from the claim.

Support for this amendment is found in the specification in Figure 6 and the corresponding description found on page 29, line 25 to page 30, line 26 and on page 20, lines 23-27.

Claim 29 has been similarly amended.

35 U.S.C 102 Claim Rejections

The Examiner has rejected claims 10, 11, 13, 16, 26 and 29 under 35 U.S.C. 102(b) as being anticipated by International Pub. No. WO 95/13668 (Pennock).

The Examiner alleges that Pennock discloses all the features of claim 10.

Claim 10 recites "A wireless network node for providing transit of data with other wireless network nodes in a wireless network...comprising; at least one transit antenna to provide data transmission between at least one other wireless network node in the wireless network and the wireless network node; an auxiliary transit antenna port to which an auxiliary transit antenna can be coupled; wherein upon detection that the auxiliary transit antenna is or is not coupled to the auxiliary transit antenna port, the wireless network node is adapted to include or not include the auxiliary transit antenna port as an option for communications". The specification on page 12, lines 18-20, states "transit links permit traffic flow between the wireless nodes 20,22,24,26,28 and between the wireless nodes 20,22,24,26,28 and the network access node 29".

Pennock discloses a system for communication between a radiotelephone and a remote transceiver. The radiotelephone comprises an internal antenna and is adapted to use an external antenna. Neither antenna can be classified as being a "transit antenna" or an "auxiliary transit antenna" as recited in claim 10 as the transit antenna of claim 10 is used for communication between two wireless nodes. Both the external and internal antenna of Pennock are disclosed to be used for communicating with a "remote transceiver 101 which sends and receives RF signals to and from a plurality of radiotelephones contained in a fixed geographic area" (page 3, lines 9-11). Pennock does not disclose or suggest the use of either the internal or external antennas for communication directly with another radiotelephone. Therefore, Pennock does not disclose "an auxiliary transit antenna port to which an auxiliary transit antenna can be coupled" where the auxiliary transit antenna provides "data transmission between at least one other wireless network node in the wireless network and the wireless network node" as recited in claim 10.

Pennock does not disclose all the features recited in claim 10 and as such cannot be held to anticipate claim 10. Applicant respectfully requests that the Examiner withdraw the rejection of claim 10.

Claims 11, 13 and 16 are dependent upon claim 10, either directly or indirectly and as a result, the claims are not anticipated by Pennock.

Independent claim 26, amended as described above, includes the feature of "adding the auxiliary transit antenna to a list of active antennas adapted for at least one of transmitting and receiving wireless signals so that the auxiliary transit antenna can be included or ignored as appropriate for at least one of transmitting and receiving wireless signals". Pennock does not disclose adding the auxiliary transit antenna to a list of active antennas or ignoring or including the auxiliary transit antenna port (external antenna connector 109) as an option for communication. Pennock discloses if the external antenna 107 is detected as being connected to the external antenna connector 109, an antenna detector circuit 113 switches switch 115 to transmit or receive with the external antenna 107 instead of the internal antenna 105 (page 3, line 23 to page 4, line 8).

Pennock does not disclose all the features recited in claim 26 and as such cannot be held to anticipate claim 26. Applicant respectfully requests that the Examiner withdraw the rejection of claim 26.

Claim 29 has been amended in a similar manner as claim 26. For at least the same reasons discussed above with regard to claim 26, Applicant submits that claim 29 is not anticipated by Pennock. It is respectfully requested that the Examiner withdraw the objection to claim 29.

35 U.S.C 103 Claim Rejections

The requirements for establishing a prima facie case of obviousness as set out in the MPEP Section 2143.01 require that the reference or references when combined teach all of the claimed limitations, that there be a reasonable expectation of success in realizing the claimed invention, and that there be a motivation to combine the references.

The Examiner has rejected claims 12 and 15 under 35 U.S.C. 103(a) as being unpatentable over Pennock in view of International Pub. No. WO 01/52357 (Kamphuis).

Claims 12 and 15 are dependent indirectly on claim 10. As described above, Pennock does not disclose all the features recited in claim 10. Furthermore, Applicant submits that Kamphuis does not disclose the features relied upon by the Examiner to be taught by Pennock. Therefore, neither Pennock nor Kamphuis, either alone or in combination recite all the features of claims 12 and/or 15.

The Examiner has failed to satisfy a necessary criteria for establishing a prima facie case of obviousness with respect to claims 12 and 15, namely that all the limitations of each respective claim be disclosed by the cited reference. For at least the reasons discussed above Applicant submits that claims 12 and 15 patentably distinguish over the combination of Pennock and Kamphuis. It is respectfully requested that the Examiner reconsider and withdraw the obviousness rejection.

The Examiner has rejected claim 14 under 35 U.S.C. 103(a) as being unpatentable over Pennock. As Pennock does not recite all the features of claim 10, upon which claim 14 depends, Applicant submits claim 14 patentably distinguishes over Pennock.

The Examiner has rejected claims 17-25, 27, 28, 30 and 31 under 35 U.S.C. 103(a) as being unpatentable over Pennock in view of International Pub. No. WO 03/017591 (Difonzo).

Difonzo discloses a mesh type wireless communication network that includes a plurality of nodes, each node having at least one dynamically directionally controllable communications link and a network controller for dynamically changing the direction of the controllable communications links of the nodes to enable transmission of signals between the nodes. However, Difonzo does not disclose use of auxiliary antennas and/or detecting if auxiliary antennas are connected to wireless node. Pennock only discloses an external antenna for communication with a remote transceiver 101, not for communication with other nodes as recited in claim 10 upon which claims 17-25 indirectly depend.

Furthermore, claim 17 recites "at least one access antenna to permit data transmission both to and from wireless mobile terminals located proximate the wireless network node". Therefore, there are three distinct types of antennas being recited in claim 17 based on the claim dependencies. Pennock discloses the use of two types of antennas, an access antenna and an auxiliary antenna. Difonzo discloses use of a single antenna for both transit and access communication functionality. There is no suggestion in either reference of using separate transit and access antennas for access and transit functionality, respectively, as well as using an auxiliary transit antenna.

For at least the reasons discussed above, the references of Pennock and Difonzo, either alone or in combination, do not suggest or teach all of the limitations of claim 17. Therefore, the Examiner has failed to satisfy a first necessary criterion for establishing a prima facie case of obviousness with respect to claim 17.

According to The Manual of Patent Examining Procedure, Section 2143.01 "there are three possible sources for a motivation to combine references: the natures of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art". It is respectfully submitted that the Examiner has not established a motivation to combine the references from any of the three sources.

With regard to the first source for a motivation to combine, Applicant submits that the nature of the problem to be solved is not the same in the two references as is made evident by the fact that the International classifications are different for the two references. Pennock teaches a device including an electronic antenna switching system that switches between an internal antenna and an external antenna and Difonzo discloses a mesh type wireless communication network that includes a plurality of nodes, each node having at least one dynamically directionally controllable communications link.

With regard to the second source for a motivation to combine, Applicant submits that neither of the two pieces of cited art suggest the subject matter of the other piece of prior art in a manner that would lead one skilled in the art to arrive at the claimed invention by a review of the two references. In addition, neither reference refers to the other. Furthermore, the respective prior art does not suggest, either alone or in combination the desirability of the claimed invention. As was clearly stated *In re Kotzab*, 55 USPQ2d 1313, 1318 "Identification of prior art statements that, in abstract, appear to suggest claimed limitation does not establish prima facie obviousness without a finding as to specific understanding or principle within knowledge of skilled artisan that would have motivated one with no knowledge of invention at issue to make combination in manner claimed" (emphasis added). As discussed above neither reference discloses or suggests the use of independent transit and access antennas, each for a respective use. Applicant submits that modifying the wireless node of Pennock with the teachings of Difonzo results in a wireless mesh network with nodes that have at most two types of antenna, one that may be used for either access or transit communication functionality and one is used as an auxiliary antenna for access communication . Applicant respectfully submits that the teachings the Examiner has selected in Difonzo to combine with Pennock are a prime example of "identification of prior art statements that, in abstract, appear to suggest claimed limitation", but clearly do not result in the invention in the manner claimed.

With regard to the third source for a motivation to combine, Applicant submits that the Examiner has failed to show motivation based on the knowledge of persons of ordinary skill in the art. The Examiner has stated that a motivation for combining the two references is "for the purpose of enhancing communication between nodes". There is no clear indication in this statement that suggests why a person skilled in the art would use separate access and transit antennas as recited in the present claim as opposed to a single antenna for transit and access functionality as disclosed in Difonzo, particularly as there is no suggestion or disclosure for motivation of such an arrangement in either of the cited references. In addition, there is no motivation for the auxiliary antenna to be used as a transit auxiliary antenna. Therefore, the Examiner has not provided proper motivation for why a person skilled in the art would consider combining the teachings of Difonzo, having a single antenna with the wireless network node of Pennock, having a single access antenna and an auxiliary antenna to result in a wireless network node having three different antenna types in the manner claimed.

As the Examiner has failed to satisfy the necessary criteria for establishing a prima facie case of obviousness with respect to claim 17, for at least the reasons discussed above, Applicant submits that claim 17 patentably distinguishes over the combination of Pennock and Difonzo. It is respectfully requested that the Examiner reconsider and withdraw the obviousness rejection of claim 17.

Claim 18 is dependent on claim 17 and should be allowable for at least the same reasons discussed above pertaining to claim 17.

With regard to claim 19, the Examiner alleges that Difonzo discloses "the auxiliary antenna is aimed so signals therefrom are transmitted to another specific wireless network node" at page 6, lines 3-5 and page 8, lines 1-7. Claim 20 is dependent upon claim 19.

With regard to claim 21, the Examiner alleges that Difonzo discloses "the auxiliary antenna has a gain greater than that of the at least one transit antenna" at page 6, lines 3-5 and page 8, lines 1-7.

With regard to claims 24 and 25, the Examiner alleges that Difonzo discloses "the auxiliary antenna provides the use of a substantially higher data rate than that provided by the at least one transit antenna" at page 6, lines 16-20 and "the auxiliary antenna provides substantially better interference suppression than that provides by the at least one transit antenna" at page 6, lines 14-16.

With regard to claims 22 and 23, the Examiner alleges that Difonzo discloses "a directional-mount connected between the auxiliary antenna and auxiliary antenna port of the wireless network node" at page 6, lines 14-18 and "the directional-mount is adjustable in order to permit an optimal alignment of the auxiliary antenna" at page 6, lines 24-26 and page 7, lines 10-

20.

Difonzo does not teach a transit auxiliary antenna, therefore Difonzo cannot teach features for components it does not have. Furthermore, Pennock does not teach a transit auxiliary antenna. The Examiner has failed to establish a prima facie case of obviousness as neither Pennock nor Difonzo, either alone or in combination, teach all the limitations of claims 19-25.

Claims 27 and 28 are dependent on amended claim 26. Claims 30 and 31 are dependent on amended claim 29. Applicant submits claims 27, 28, 30 and 31 patentably distinguish over Pennock and Difonzo as neither Pennock nor Difonzo, alone or in combination, disclose or suggest "adding the auxiliary transit antenna to a list of active antennas adapted for at least one of transmitting and receiving wireless signals so that the auxiliary transit antenna can be included or ignored as appropriate for at least one of transmitting and receiving wireless signals" as recited in independent amended claims 26 and 29.

The Examiner has failed to satisfy a necessary criteria for establishing a prima facie case of obviousness with respect to claims 27, 28, 30 and 31, namely that all the limitations of each respective claim be disclosed by the cited reference.

For at least the reasons discussed above Applicant submits that claims 17-25, 27, 28, 30 and 31 patentably distinguish over the combination of Pennock and Difonzo. It is respectfully requested that the Examiner reconsider and withdraw the obviousness rejection.

In view of the forgoing, early favourable consideration of this application is earnestly solicited.

Respectfully submitted,

By

Allan Brett
Reg. No. 40,476
Smart & Biggar

Date: December 22, 2005
RAB:MSS:mcg
Ottawa, Ontario, Canada
Tel.: 613-232-2486

10/682092
Method of Enhance Link Range in a Distributed Multi-Hop
Wireless Network using Self-Configurable Antenna
Annotated Sheet Showing Changes

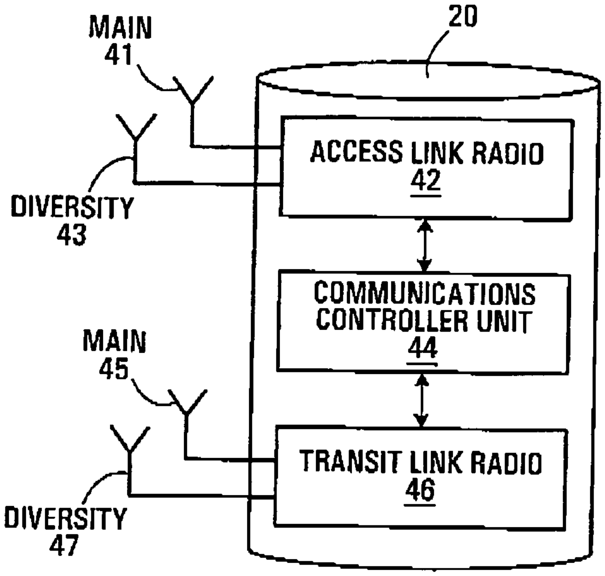

FIG. 2

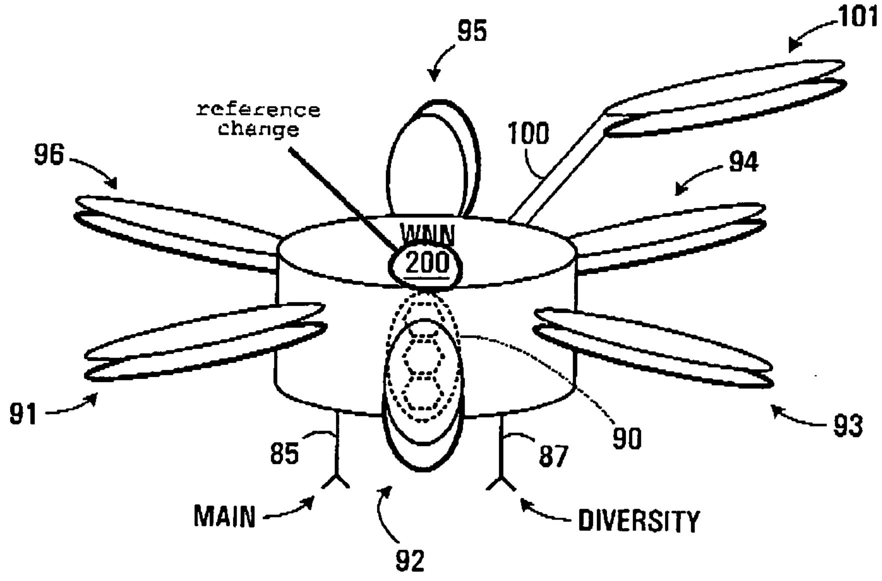

FIG. 3